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- ART. IV. — 1. *The Albert Nyanza, Great Basin of the Nile, and Explorations of the Nile Sources.* By SAMUEL WHITE BAKER. London and Philadelphia. 1866. 8vo. pp. 509.
2. *Journal of the Discovery of the Sources of the Nile.* By JOHN HANNING SPEKE. London and New York. 1863. 8vo.
3. *The Sources of the Nile.* By CHARLES T. BEKE. London. 1860. 8vo. pp. 155.

THE recent discoveries of Speke and Grant, and the still later discoveries of Baker, have removed the mystery which so long enveloped the sources of the Nile.

One by one, within a few years past, many of the great problems of physical geography have been solved; the course of the river Niger, the characteristics of the Sahara, the height of the great peaks of the Himalayas, the structure of the Sierra Nevada, the Northwest Passage, the interior of Australia, and other long-disputed questions, have been determined by the boldness of modern explorers and the methods of modern science. Many more such problems still remain unsettled,—the depth of the oceans and the form of their basins, the existence of an open polar sea, the structure of the Rocky Mountains, the characteristics of that part of Interior Africa beyond the lakes discovered near the western coast, the relations of the mountain chains of Asia to one another, and other similar inquiries of a less-extended but not less-important character, still invite the adventurous to diligence in exploration; but the prize of world-wide renown which has been held out since the days of ancient Greece to the successful discoverer of the origin of the Nile appears to be fairly won by Speke, Grant, and Baker.

The united results of three expeditions, and the testimony of three competent observers, have established the fact that the White Nile (the westernmost of the two great branches which have long been known as coming together at Chartum) proceeds from two vast lakes situated near the equator and almost directly south of Alexandria. As it had been previously demonstrated that the Blue Nile (the easternmost of the two tributaries) was the lesser stream, these inland equatorial seas

which have just been discovered must be regarded as the real sources of the Nile.

It is true that our knowledge is still very imperfect respecting these lakes; new expeditions must be sent out to determine the hydrography of the river-basin; many years will pass before such a work can be prepared respecting the Nile as Humphreys and Abbot have recently given us on the Mississippi basin; yet it is no longer a secret whence come those marvellous summer floods which spread fertility upon the plains of Egypt, and fit that land to be in every age one of the principal granaries of the world.

The publication of the volumes we have named at the head of this article affords us, therefore, a fitting opportunity to review the history of Nilotic discovery, and to trace in outline the successive steps by which the sources have been reached. This we shall attempt to do in a concise manner, confining our attention to those epochs only which are most worthy of notice.

The ancient world knew nothing of the origin of the Nile. Neither the Hebrew Scriptures nor the remains of Egyptian lore which have come down to us from antiquity afford us any clew upon the subject. In the book of Deuteronomy the land of Egypt is spoken of indeed as "a God-forsaken country," because of the peculiar method by which it is watered; and, by way of contrast, the Promised Land is commended as a land of hills and valleys, "which drinketh water of the rain of heaven," and doth not depend on occasional overflows, for the eyes of the Lord "are *always* upon it from the beginning of the year even unto the end." But except this obscure intimation that the smiles of Providence were withdrawn from the river Nile, we call to mind no allusion in the Scriptures to the curious problem which these overflows involved.

It is not so in the writings of the earliest Greek geographer. Herodotus devotes fifteen of the little chapters of his second book (an amount equal to several modern octavo pages) to a discussion of the peculiarities of the Nile, having himself explored the river as far south as Elephantiné. In the light of modern science his comments are highly entertaining. The wonderful overflow which occurs during the hundred days of

summer leads him to offer explanations of the cause, profound in form, but empty in reality. Having stated the facts which had come to his knowledge, and remarked that he could not obtain any elucidation of them from the inhabitants of the country, he proceeds to examine the theories of certain foreigners, "wise men of Greece," and heartily ridicules the possibility which they had suggested of snow-capped peaks near the equator. He likewise laughs at several other of their notions in order to bring out his own conclusion respecting the alternation of flood and drought, namely, that "during the winter the sun is driven out of his usual course by the storms, and removed to the upper parts of Libya." "This," he adds, with charming simplicity, "is the whole secret in the fewest possible words."

He next considers the sources of the Nile, declaring that he has found no one among all those with whom he has conversed, whether Egyptians, Libyans, or Greeks, who professed to have any knowledge on the subject, except one person. This anonymous amateur geographer, whose story respecting the origin of the river appears to be the oldest one on record, is spoken of as a sort of Secretary of the Treasury of Minerva at Sais. Herodotus, though sometimes charged with credulity, was on his guard as he listened to the scribe, being suspicious that the story might be a joke, for the teller of it did not seem, he says, "to be in earnest." But, whether jocosely or seriously propounded, this earliest solution of the Nilotic problem is worthy of notice. We take it from the translation of Rawlinson.

"Between Syêné, a city of the Thebais, and Elephantiné, there are (he said) two hills with sharp conical tops; the name of the one is Crophi, of the other, Mophi. Midway between them are the fountains of the Nile, — fountains which it is impossible to fathom. Half the water runs northward into Egypt, half to the south towards Ethiopia. The fountains were known to be unfathomable, he declared, because Psammetichus, an Egyptian king, had made trial of them. He had caused a rope to be made, many thousand fathoms in length, and had sounded the fountain with it, but could find no bottom. By this," continues Herodotus, "the scribe gave me to understand, if there was any truth at all in what he said, that in this fountain there are certain strong eddies, and a regurgitation, owing to the force wherewith the water dashes against the mountains, and hence a sounding-line cannot be got to reach the bottom

of the spring. No other information on this head could I obtain from any quarter."

Nearly five centuries intervene between the days of Herodotus and those of Strabo and Pliny, the great encyclopedists; yet they are the next geographers whose writings have come down to us from antiquity. Turning to their vast compilations, queer mixtures of the true and false, we quickly discover that a decided advance has been made in geographical knowledge.

Strabo bases his account of the Nile in some important points on the statements of two previous writers, whose works have only reached us in this fragmentary form, — Eratosthenes, who lived about three hundred, and Artemidorus, who lived about two hundred years before Christ. The first named of these two writers tells us that the river Nile receives two tributaries, which proceed from certain lakes upon the east, — *duo flumina e lacubus quibusdam ab oriente delata*, — and come together enclosing "the island Meroe," which is properly not an insular, but a Mesopotamian region, just below Chartum. These two tributaries he calls the Astaboras on the east, and the Astapus. Some persons, he says, call the latter Astosabas, considering the Astapus to be another river flowing from certain lakes on the south.

Artemidorus likewise, as quoted by Strabo, speaks of the Astaboras as rising in a lake.\* The critics may differ as to whether Strabo believed in two or three tributaries in the Nile, but it is entirely clear that he considered all the upper tributaries to be of lacustrine origin. It is curious that this early announcement should be confirmed by Ptolemy, as we shall presently see, repeated in modified forms through the Middle Ages, then lost sight of almost wholly, and that, finally, the lakes themselves should be first visited by Europeans in the middle of the nineteenth century.

Strabo also tells us of a traveller in Egypt, at the time of Euergetes II., Eudoxus of Cyzicus, who was bent on exploring the Nile; but he does not tell us with what results, nor to what extent his investigations were carried.†

Pliny, writing not far from the time of Strabo, likewise men-

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\* Strabo, 16. 4. 8.

† Ibid. 2. 3. 4.

tions that the Nile takes its rise *lacu protinus stagnante quem vocant Niliden*.<sup>\*</sup> This, he says, King Juba has found out.

From the writings of Seneca,<sup>†</sup> another contemporary of Strabo, we learn that he had listened to the story of two centurions, the Captains Speke and Grant of that day, whom the Emperor Nero had sent out, in the interests of science, — *veritatis amantissimus* are his words, — to explore the great Egyptian river. They went a great distance, and finally came upon extensive swamps, *ad immensas paludes*, to which there appeared no outlet. There they saw two rocks, out of which a great river current proceeded; but whether this was the source or only a tributary of the Nile, they are unable to tell us. Can it be that these centurions penetrated to the great fall, which Speke and Grant describe as issuing from the Lake Nyanza?

But all these hints are very vague. There is as yet no attempt at mathematical geography, and the location on a map of the upper courses of the river and the lakes alluded to was purely hypothetical. Claudius Ptolemy, of the second century after Christ, is a very different writer from those whom we have named. Following the lead of Marinus of Tyre, who lived in the days of Nero, he compiled a long series of topographical tables, indicating with as much mathematical precision as was then possible the latitude and longitude of every city, of every river at its source and mouth, and of the termini of mountain chains. His allusions to the Nile are of the briefest character, but they are interesting in connection with the recent English discoveries. We cannot suppose that his statements on this subject, or, indeed, that many of his data, are based upon personal observation, but we must regard them as the essays of a mathematical writer to reduce to an accurate tabular form the information which came to him from the best accessible sources.

Many of the manuscripts of Ptolemy, and likewise the earliest printed editions, are illustrated by ancient maps, which have sometimes been regarded as Ptolemy's own work, though scholars are now generally agreed that they were constructed by later hands, one of the most noteworthy being an Alexan-

<sup>\*</sup> Nat. Hist., Lib. 5. ix. 10.

<sup>†</sup> Nat. Quæst., vi. 9.

drian draughtsman named Agathodæmon, who lived in the sixth century. Five of these twenty-seven maps are devoted to Africa. We are forced to admit that both text and maps have undoubtedly been mended by successive copyists; sometimes, as Ritter suggests, the text from the maps, and sometimes the maps from the text. These alterations tend to lessen, of course, the reliance to be placed on either work, so far as any question of detail is concerned, and make it hard to determine in every instance what is Ptolemaic and what is later geography. But, notwithstanding all this, the critical acumen of German scholarship has detected certain principles by which the original may generally be severed from subsequent additions.

The *textus receptus* of Ptolemy, as interpreted by the best critics, asserts that the sources of the Nile are to be found in two lakes, situated, the western six, and the eastern seven degrees south of the equator, in fifty-seven and sixty-five degrees of east longitude. These lakes, again, are fed by streams, it is said, which come from the snow-covered "Mountains of the Moon," a range reported as extending from east to west, twelve degrees and a half below the equator. Disregarding the specifications of latitude and longitude, there is a very curious coincidence between these statements and the modern discoveries of snow-clad peaks and enormous lakes lying near to the equator. The researches of Speke and Grant might almost be summed up in one of Ptolemy's sentences, — *paludes quoque ex quibus Nilus fluit non esse juxta mare sed multo interiores*.\*

There is another direction in which we may look for early opinions respecting the sources of this famous river. We refer to the writings of the learned Arabs of the Middle Ages, which

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\* Ptolemy, Geog. ed. Mylius, 1584. The Latin version from which we quote, though not very ancient, is the earliest with a map which it has been convenient for us to consult. It was published in 1584, with a frontispiece showing the range of mountains just referred to as situated twelve degrees south of the equator. From its slopes six little streams proceed, arranged in two groups of three each, and each of these groups leads to a lake, from which one of the two main tributaries of the Nile issues forth. There is in this double and triple arrangement an artificial regularity which is suggestive of fancy rather than fact; and yet the coincidence which is found here between the old and the new geography of the Nile does not seem to be merely accidental.

within the last half-century have been made accessible to the scholars of Christendom. The glimpses which may be obtained of this field, through the help of modern European versions, lead us to expect further curious revelations respecting the Arabian knowledge of the globe, and especially of inner Africa.

With respect to our present investigation, some confusion arises from the fact that the Nile was an appellation common to all the streams of Northern Africa. Thus the Arab geographers speak of three Niles as springing from an inner sea, known as the Kuar, or Kura, one stream running to the north, another to the west, and a third to the east.

In the recent "*History of Geography*," by Peschel, an engraved copy is given of a map of the world by Edrisi, dating from 1154 after Christ. On this map two lakes near the equator are represented as fed each by five streams proceeding from a range of mountains. These two lakes are united by six streams to a third, and from this proceeds the true Egyptian Nile. At right angles two other streams are drawn, one of which enters the Atlantic and the other the Indian Ocean.

Masudi, another Arabic geographer, also mentions that on a Ptolemaic atlas he had seen delineated twelve sources of the Nile, proceeding from the Mountains of the Moon, and united in two seas, of which the outlets were subsequently joined in a single stream. Here, again, we see handed down through quite a different medium the suggestion of twin lakes.

The European geographies of the Middle Ages are for the most part repetitions from Roman sources, though traces are obvious of information derived from Arabian writers. The Nile is represented as consisting of two branches, one of which comes from the south, and the other from a lake in the west, which sends a second stream into the Atlantic. This view is indicated in a map of the brothers Pizigani, of the year 1367, which we find described by Peschel. But there is so little that is original in this class of writings that we may pass rapidly on to modern times.

Thus we have seen that in the loosely compiled narratives of Strabo and Pliny, in the more precise terms of Ptolemy, on the subsequent Ptolemaic charts, and in the European maps which preceded the epoch of modern discovery, the Nile was almost

uniformly presented as having its origin in lakes, the number, position, and extent of which were indefinitely indicated. Ptolemy was the only authority who had any pretensions to accuracy. We may even say that, down to the year 1863, this Alexandrian geographer of the second century remained, so far as we can judge, the only independent and trustworthy writer on whom depended the theory of lacustrine sources. It may indeed be asserted, that his statements are questionable, and that only the testimony of an eyewitness could be regarded as having the stamp of positive knowledge. It may be true that a shrewd guess, a vague report from the aborigines of the interior, an attempt at geographical speculation, or a plausible hypothesis, was the simple basis of the tradition which actual observation within the last five years has determined to be substantially true. But even with this qualification, it is still a most interesting fact that the exact statements of Ptolemy, long regarded as truth and then rejected as error, have been confirmed by the personal observation of competent explorers seventeen centuries later. The lost lakes have been found. The mists which had settled upon them have risen, and their existence and position is no longer a question.

As a convenient outline upon which to follow the course of modern discovery, we beg the reader to sketch for himself, or to trace upon some modern map, the principal points referred to ; for it is only by thus pausing to reflect and compare, that the magnitude of the problem which has been solved appears in its full extent. From the equator (which crosses the two equatorial lakes discovered by Speke and Baker) to the Mediterranean Sea is a distance of thirty-two degrees, or more than twenty-two hundred miles in a direct line. The Nile by its windings must be nearly a hundred miles longer than this. It therefore stands in the very foremost rank of river dignities, surpassing in length the Amazon, the Mississippi, and the Missouri, if each is taken separately, and surpassed only by the entire course of the Missouri-Mississippi from its sources to the Gulf. Tourists think they have made a long journey, as indeed they have, if they ascend as far as the second cataracts, — a distance of seven hundred and fifty miles ; but that is little more than half-way to the great town of Chartum, or Khartoom,

which is regarded as the metropolis of High Nubia, or the Egyptian Soudan, — the St. Louis, as we may call it, of the basin of the Nile. At this point the two great confluent rivers come together; that on the east being commonly known as the Blue Nile, and that on the west as the White Nile. The Blue Nile—in the Arabic, Bahr el Areb, or sometimes Bahr el Azrek—takes its rise in a mountain lake of Abyssinia called Tzana ( $12^{\circ}$  N. Lat.), 6,270 feet above the level of the sea. The White Nile, the greater of these two branches, known as Bahr el Abiad, proceeds from lakes more than a thousand miles farther to the south. Upon this upper western branch, eight hundred miles and more above Khartoom, is Gondokoro, a slave depot, a station of the inland ivory-traders, and for a short time the seat of a Roman Catholic mission now given up. Below the junction of the two tributaries there is only one large affluent, the Black River, or Bahr el Aswad, better known as the Atbara, which enters the Nile about thirteen hundred miles above its mouth. These are the outlines of the region to which our attention is directed.

We now turn, according to our proposal, from the suggestive remains of ancient geography to the positive acquisitions of modern exploration, in order to trace the successive steps by which the hidden sources have been brought to light. It has taken just one century of positive and repeated efforts, sustained by the assistance of several enlightened governments, aided by all the appliances of modern science and incited by the plaudits of the civilized world, to reach the spots so long inaccessible. The fortress was carefully guarded by innumerable outposts, but, one by one, they have been captured. Pathless thickets, desert plains, tropical diseases, dangerous, sometimes ferocious animals, cruel tribes of savages, have done their utmost to ward off the approach of the European, but at last he has triumphed. One hundred years have hardly passed since the days of Bruce, the first of the modern discoverers, and the goal is reached.\*

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\* The great explorers who followed Columbus and Vasco da Gama were too much delighted with the revelations of the sea, too much captivated by the fascinations of oceanic discovery, to penetrate far inland. Occasionally the thirst for gold led them beyond the coast; but commonly the bearers of the Cross were more in-

James Bruce, the explorer, who led the way to the solution of the riddle of the Nile, was a Scotchman of education and position, who had exhibited much fondness and some fitness for foreign travel, and was consequently invited by the British ministry, in 1760, to become Consul-General at Algiers. The avowed object of his appointment was to enable him incidentally to gain information respecting the interior of Africa. In the preliminary conversations with Lord Halifax and Mr. Wood, we are informed that "mention was frequently made of the sources of the Nile, and of the obscurity in which they had ever been concealed. Hints were thrown out that the discovery of these 'coy sources' could not be expected from an ordinary traveller, much less from one who had no experience in those difficulties which must accompany an enterprise of such magnitude and glory; and it was insinuated that, if any Briton should fulfil the wishes of every age, in this particular, he ought not to despair of a high reward."\*

These official intimations acted like spurs upon the excitable and ambitious traveller; and, although disappointed in respect to some of the promised arrangements, he set out, in 1768, for his famous voyage of discovery in Abyssinia. It was to the sources of the eastern branch, or Blue River, that his attention was directed, known to him as the Abay or Abai River. He approached this region from Massowah, on the Red Sea, and spent six years in the explorations, attended by one assistant only, — Luigi Balugani. The copious narratives of Bruce, when at length, in 1790, they were published, attracted great attention and awakened much criticism. He was forced to acknowledge that the branch he explored was inferior in the volume of its waters to the western, or White Nile; but he still claimed that it was the true Nile, and that he was the original discoverer of its source. Subsequent researches have demonstrated his error in this fundamental opinion, and have likewise weakened, if

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clined than the lovers of temporal fame and gain to penetrate into wild and savage countries. Thus in Africa, around the sources of the Nile, as well as in America, around the sources of the Mississippi, we early come upon the missionary stations which were planted by the Order of the Jesuits. Father Peter Paez, a Spanish missionary, not far from the beginning of the seventeenth century, penetrated to the head of the Blue Nile, and visited its sources. The efforts of Bruce to discredit his narrative cannot be regarded as successful.

\* Bruce's Travels, 2d ed., I. 47.

not destroyed, the confidence of geographers in some of the minor statements of his narrative ; but his book was lively and entertaining, not burdened by scientific data, and it helped to make popular the love of African discovery.

Whatever may have been the defects of Bruce, he was a bold and enthusiastic pioneer, whose achievements did much to arouse the zeal and incite the efforts of other abler travellers. The conclusion to which he came, that the Blue Nile was the real Nile, although erroneous, was stated so positively, that it gained very general assent ; and on the tombstone of the traveller the sentence was engraved, "He discovered the sources of the Nile." Nearly half a century passed before an attempt was made to trace the course of the western branch. Meanwhile, however, the interest which was awakened in the exploration of Central Africa had given vigor to a voluntary association, which was formed in London in 1788, for the promotion of discovery. Under its auspices, attention was directed to that other mysterious river, the Niger ; and the successive journeys of Mungo Park, Denham and Clapperton, Lander, and others, were serviceable in revealing the western central portion of the African continent, and in preparing the way for the recent and more thorough investigations of the lamented Barth and his contemporaries.

As an indication of the state of knowledge forty years ago, the reader may turn, if he is curious in such inquiries, to the volume on Africa in Ritter's "*Erdkunde*," published in 1822, where the learned author, surveying the information which was then at command, cautiously concludes that it is very improbable that the Niger and the Nile are connected.

The first attempt to explore the western branch, Bahr el Abiad, or the White Nile, was made in 1827, by M. Adolphe Linant, a Frenchman, who acted under the patronage and guidance of the British Association for promoting African Discovery. Setting out from Chartum, he went with great difficulty about one hundred and forty miles up the river, as far as El-Ais, Aleis, or Eleis ; but the lions and hippopotami, the shallow water and the hostile Shiloukhs, prevented his farther ascent. Linant was persuaded that he was upon the main stream of the Nile ; but he was unable to obtain any precise

information respecting its origin, although some of the native Arabs pretended to know about it. The account of this journey was made public in 1832.\*

A few years later, Méhémet Ali, that enlightened ruler of Egypt, ready to develop the resources of his country, and influenced, without doubt, by the suggestions of educated Frenchmen, determined to make a thorough investigation of the region of the Upper Nile. Accordingly, he sent out three successive expeditions between the years 1839 and 1842. The second of these parties was under the direction of M. de Arnaud, a man of superior fitness for the task, who succeeded in getting as far as  $4^{\circ} 42'$  N. Lat., and did much to prepare the way, by accurate observations and detailed reports, for further investigations. An account of this journey, by Ferdinand Werne, a German volunteer who accompanied the expedition, was published in German and English, and attracted much attention.

One of the results of the expeditions of Méhémet Ali, though not intentional, was the growth of Chartum. It soon became the residence of an Egyptian pasha, the seat of more than one European consulate, and a convenient mart for all the traders of the Blue and White rivers. The most graphic account of its appearance which we remember to have seen is that of our own countryman, Bayard Taylor, who was probably the first American to penetrate so far.† His visit was in 1852. At this point is the central station of the Roman Catholic missions maintained for some years past under the direction of the Apostolic Vicar, Dr. Knoblecher, who was trained at the Propaganda in Rome for labors in this region, and to whom the world is indebted for the assistance he has given in the explorations of the Nile. This mission was founded by Pope Gregory XVI. in 1846, for the conversion of the negroes, the suppression of the slave-trade, and the welfare of the scattered Catholics of the region. The actual commencement was made at Chartum in 1848; but Mohammedan hostility was so strong that Father Knoblecher, in the following year, went up the White Nile in search of a more promising position, and he succeeded in reach-

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\* Journal of the Royal Geographical Society, London, 1832.

† Central Africa, p. 283.

ing a point some fifty miles beyond the utmost limits of the Egyptian exploration. Except in geographical acquisitions, his efforts were fruitless, for the natives regarded him as a magician, and were very shy of his advances. But a little later a station was established at Gondokoro ( $4^{\circ} 55' N. Lat.$ ), and maintained, we believe, till 1860. Some of the missionary observations have recently been published by Father Kaufmann.

In the hope of further discovery above Gondokoro, Dr. Pene, a French physician long resident at Chartum, succeeded, after long efforts, in getting from France a small steamboat, with which he ascended the White Nile as far as Gondokoro; but while waiting there for the increase of the waters, he fell a victim to malarial fever, so that the researches which he projected farther south came to naught. Perhaps, if death had not interrupted his plans, France would have gained the prize which Baker won for England, and our maps of the twin lakes would perpetuate the names of Napoleon and Eugénie, instead of Victoria and Albert.

Thus we see that, during the last five-and-twenty years, the whole tendency of Nile exploration was toward the sources of the White river. We have not referred, it is true, to some expeditions to the neighboring lands, which have had but little significance in the solution of the main problem; and we are especially sorry not to have space to give an account of the researches of Le Brun Rollet, the Tinne ladies, and Consul Petherick; but we have endeavored fairly to point out the real progress of discovery. Chartum, we observe, was the point of departure, and Gondokoro was virtually the last point gained by the explorers from the North, as late, we may say, as 1860. No glimpse had yet been obtained of the lakes which were so near; no new reports were heard of their existence.

We must now turn to a very different line of inquiry. Subsequent to the year 1849 particular attention had been directed to the eastern coast of Africa, in the neighborhood of Mombas and Zanzibar, by some extraordinary stories received from Krapf and Rebmann, two missionaries sustained in that region by the Church Missionary Society of London. They first reported that there were snow-covered mountains near the coast, and

almost under the equator. Then they sent home an account of a vast lake, of which they had received descriptions from the traders of the interior. Both announcements were received with considerable incredulity, but they attracted great attention, and soon led to more particular inquiry. Mr. W. D. Cooley, who had long been noted as a student of Inner African geography, especially threw doubts on these missionary stories; but their substantial correctness was vindicated by the learned Dr. Petermann. Very soon positive and indisputable confirmation of the existence of the snow-covered mountains was gained by the explorations of Von der Decken and Thornton.\*

In regard to the second question, the extent and position of a great interior lake lying west of Zanzibar, equal curiosity was excited, and presently (in 1857) Captain R. F. Burton set out to ascertain the truth, under the best British auspices. He was disposed to ridicule in the extreme what he called "the Mombas mission map"; but, after all, he found such a lake as had been imperfectly described by its authors, and the credit of the missionaries was doubly vindicated in the estimation of fair-minded critics. A companion of Burton's, Captain Speke, made a *détour* on the homeward march, going north a journey of five-and-twenty days from the east and west route which had been followed by Burton and himself, between the sea-coast and Lake Tanganyika. To his astonishment, at the limit of this march he discovered another great lake, called by the natives Nyanza, or the Water, and to which he added the designation Victoria. He estimated the height of this lake at 3,740 English feet, and determined its southern extremity as in 2° 24' S. Lat. He could learn nothing sure respecting the extent of the lake toward the north, and so reluctantly rejoined the chief of the party, and returned with him to England. Captain Burton did not think much more of this discovery than of "the Mombas mission map," but it proved to be of the greatest importance.

English geographers were greatly excited by the narratives of Burton and Speke. So much had been actually found out, and so much was suggested as possible, that Speke, attended by a new companion, John H. Grant, was sent back as speedily

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\* See a letter from Dr. Krapf, April 6, 1853, in *Am. Or. Soc. Journal*, Vol. IV., with a map.

as possible, with a liberal outfit, to find out more about that wonderful lake on which his eyes had barely rested. Entering the interior as before from near Zanzibar, and retracing very nearly his former journey to the west and north, Speke conducted his comrade to the Victoria Water. In October, 1861, he saw again this lake. Following its western shore, he at length came upon the outlet, which, from its size and course, he was persuaded must be a chief, if not the chief, tributary of the Nile. This stream he followed in the main, though with some important interruptions, till it joined the Nile. He therefore claimed to be the first to visit the source of the river. The account of this second most important journey has been so widely read, throughout the civilized world, that we need not dwell upon it. The brief telegram which was sent to London from Alexandria, when the travellers reached the latter city on their return, — “The Nile is discovered,” — was a synopsis of their journey.

Captain Burton, Mr. Galton, and other critics, however, were not convinced that the problem was solved by Speke and Grant, and published their strictures upon this journey. Those who read the Proceedings of the London Geographical Society, and especially those who follow the London Athenæum, have been amused by the quadrilateral controversy between Burton and Speke, the rival explorers, and Cooley and Beke, the rival students of geographical history. The strongest criticisms brought against Speke are these: that according to his own story he did not follow the stream which issues from the Victoria Water more than one third of its distance to the known Nile, though he touched it at different points; and, secondly, that he cannot claim to have discovered the sources of the Nile, because he has found a lake from which it issues, any more than he who first traced the Rhone to the Lake of Geneva, or the St. Lawrence to Lake Ontario, could claim to have reached the fountain of their waters. We give these comments for what they are worth. They do not impair the statement that these English travellers have discovered a great equatorial lake, from which a large portion of the waters of the White Nile are derived.

Just as Speke and Grant, elated with their success, were

emerging from the wilderness, and were approaching again the edges of the known world at Gondokoro, where they were expecting the supplies which Consul Petherick had stipulated to furnish, another English traveller, with his wife, was drawing near to the same station from the north, — Samuel White Baker, a new aspirant for the perils and the prizes of African discovery. It was a most fortunate coincidence that the incoming and outgoing parties should thus have met. There were many chances against the coincidence; but most happily for Baker, he learned from his countrymen just what they had accomplished and what they had failed to do. In particular, Speke told Baker of a second lake lying west of the Victoria Nyanza, the Luta N'zige, which was certainly connected with it by a stream. Speke's annoyance that he had not been able to visit this second lake served to increase the ardor of the impatient Baker, who had been at first disheartened by the thought that the coveted prize was already won by his brave predecessors. The two parties separated, — Speke and his friend to return to their home; Baker and his faithful and daring wife to penetrate the difficulties and the horrors of an unknown land of savages.

At length the labors of the latter couple were rewarded by reaching the Luta N'zige, to which they gave the name Albert Nyanza, as the consort of the Victoria Water. This lake stretches, according to the story of the neighboring people, in a north and south direction through about five degrees of latitude (from 3° North to 2° South), and according to the estimates of the travellers is 2,720 feet above the level of the sea, or six hundred feet lower than the second estimate which was made by Speke of the elevation of the Victoria Nyanza. Furthermore it was ascertained, not indeed with absolute certainty, but with strong probability, that the stream which Speke and Grant saw issuing from their lake enters the second lower sea, from the northern extremity of which it again proceeds on its northward course. In other words, it appears that the second of these lakes is a sort of supply reservoir, which swells the stream proceeding from the first.

We cannot sum up the whole discovery more concisely than Baker has done it in the following concluding passage: —

“The Nile, cleared of its mystery, resolves itself into comparative simplicity. The actual basin of the Nile is included between about the 22° and 39° East longitude, and from 3° South to 18° North latitude. The drainage of that vast area is monopolized by the Egyptian river. The Victoria and Albert Lakes, the two great equatorial reservoirs, are the recipients of all affluents south of the equator; the Albert Lake being the grand reservoir in which are concentrated the entire waters from the south, in addition to tributaries from the Blue Mountains, from the north of the equator. The Albert N’yanza is the great basin of the Nile: the distinction between that and the Victoria N’yanza is, that the Victoria is a reservoir receiving the eastern affluents, and it becomes a starting-point, or the most elevated *source*, at the point where the river issues from it at the Ripon Falls; the Albert is a reservoir, not only receiving the western and southern affluents direct from the Blue Mountains, but it also receives the supply from the Victoria and from the entire equatorial Nile basin. The Nile, as it issues from the Albert N’yanza, is the *entire* Nile; prior to its birth from the Albert Lake it is *not* the entire Nile. A glance at the map will at once exemplify the relative value of the two great lakes. The Victoria gathers all the waters on the eastern side and sheds them into the northern extremity of the Albert; while the latter, from its character and position, is the direct channel of the Nile, that receives all waters that belong to the equatorial Nile basin. Thus the Victoria is the first *source*; but from the Albert the river issues at once as the great White Nile. . . .

“My exploration confirms all that was asserted by Speke and Grant. They traced the country from Zanzibar to the northern watershed of Africa, commencing at about 3° South latitude, at the southern extremity of the Victoria N’yanza. They subsequently determined the river at the Ripon Falls, flowing from that lake, to be the highest source of the Nile. They had a perfect right to arrive at this conclusion from the data then afforded. They traced the river for a considerable distance, to Karuma Falls, in N. lat. 2° 15'; and they subsequently met the Nile in 3° 32' N. lat. They had heard that it flowed into the Luta N’zigé, and that it issued from it; thus they were correct in all their investigations, which my discoveries have confirmed. Their general description of the country was perfect, but not having visited the lake heard of as the Luta N’zigé, they could not possibly have been aware of the vast importance of that great reservoir in the Nile system. The task of exploring that extraordinary feature having been accomplished, the geographical question of the sources of the Nile is explained.” — p. 475.

As we review the exposure to sickness, fatigue, starvation, and death which has been endured by one and another of the brave explorers who have followed up the Nile, and especially as we recall the innumerable obstacles which were overcome before the lakes were reached, we are filled with admiration for the patience and the heroism which have been expended in this geographical research. We honor the love of knowledge which sends out party after party to engage in such difficult investigations. We rejoice in the measure of success which has been obtained; and we delight to hand down the names of Speke and Baker with those of great discoverers who have helped to reveal to the civilized world the hidden regions of Ethiopia, and who have thus been contributing also to the solution of a problem even greater than the question of physical geography, — the possibility of reclaiming from their fearfully low estate the vast tribes of Central Africa, now scarcely above the wild beasts of the forest.

While we are rendering honor to Baker and Speke for their great endurance, sagacity, and success, it has amused us to look at the old narratives of African discovery which are contained in the great collection of Purchas his Pilgrimes; not, however, because we attach much value to stories which are obviously made up of so much that is false, and which were written in an age of much credulity and but little science. A recent contributor to the London Athenæum,\* before the return of Baker, called attention to two allusions in Purchas which, so far as we remember, have escaped the notice of the many recent investigators of the question of the Nile. He quotes from the edition of 1617 two passages, only one of which we have succeeded in verifying by the second edition of 1625, to which alone we have access.

Alvarez, the Portuguese priest, says that in Gojame, one of the kingdoms of Priest John, the Nile “ issueth out of two lakes which are so great that they seem to be seas.” Peter Covillan declares that he has seen this.

So again, in another page of Purchas, we read that the “ River Nilus runneth northward many hundred miles [from a

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\* No. 1906, October 24, 1863.

lake already described], and then entreth into another lake which the inhabitants do call a sea. It is much bigger than the first, containeth in breadth 220 myles, right under the equinoctial lyne."

A third reference to these lakes may be worth mentioning, which is given on the authority of Anthonie Fernandez.\* The Nile rises, he says, "in the furthest parts of Goijame, where there is a meere or fenne, without bottom, welling and admirably boyling forth waters continually, whence Nilus springeth. It ariseth small, and first for a dayes journey and a half trendeth eastward. Then it enters into a lake as great as any imagined to bee in the world, running through the midst thereof with a swift course," &c.

These and other glimpses which we get of Portuguese geographical knowledge lead very naturally to the belief that, if the archives of that kingdom were thoroughly examined, much information now hidden in respect to Inner Africa would be discovered. It is well understood that Portugal, in the time of its maritime ascendancy, was inclined to conceal, for its own advantage, the reports sent home by its naval heroes, and that since the loss of this ascendancy very little interest has there been shown in the study of the globe. It may be found that the English success so recently achieved is only an independent recapture of a prize which was won two or three centuries before, by explorers whose very names are almost unknown.

Before closing this summary, we desire to bear our testimony to the skill with which Dr. Charles Beke has sifted the allusions to the Nile in all early writers, and has shown their relation to the actual facts successively brought out by modern discovery. His criticisms have been most serviceable to the cause of truth; and, unless we are misled, they have had far more influence than the explorers are willing to admit in determining the probable locality of the sources of the Nile, and the advantages connected with an entrance to the interior from the eastern coast of Africa. His views on this subject were printed in the London Geographical Journal for 1846, and two years subsequently he undertook to fit out an exploring party, who were

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\* Purchas, 2d ed., p. 1182.

to proceed inland from the Zanzibar coast. An excellent summing up of his varied investigations was given in the little volume whose title we have named at the head of our article, published in 1860. In 1851, before the British Association, he called attention to the positions which had been reached by Knoblecher, only three hundred and seventy miles from the snow peaks, and three hundred and sixty miles from the lake of the Mombas mission ; and he said that the Nile basin was confined within these limits, unless, indeed, the river should be found to flow from the lake itself. The opinions which he has persistently presented have received abundant confirmation from the most recent explorations.

We must also mention the admirable Geographical Journal of Dr. Petermann, which since its establishment has been the repository of new geographical information from every portion of the globe. The power to attract such prompt contributions, the skill in annotation, and the ready command of the best cartographical talent, evinced in every number of that periodical, are a perpetual illustration of editorial tact and learning. Such a work is a constant incitement to geographical discussion and research.

Here we close our sketch of the discovery of the Nile. We have made no reference to many incidental questions on which it would have been pleasant to dwell ; but we have reviewed an investigation which may be said to have continued twenty-three hundred years, from the early inquiries of Herodotus up to the present time. Only the most significant phases of the discussion could be presented in our pages. We are far from the opinion that the work is done. The discovery of these lakes will only stimulate new researches. We require to know their exact position, elevation, and area, — their relation to the surrounding hills and the other lakes which lie still farther south : we need to ascertain from what springs their great cups are filled. That there are equatorial lakes which feed the Nile, is what we know at present ; beyond this how little have we learned ! There is an ancient saying, that he who tastes the waters of the Nile, and leaves the land, will surely return to drink again. So it is with Nilotic discovery. It fascinates all who engage in it, either by the easy methods of arm-chair

study or in the dangerous paths of personal exposure. The waters are "strong waters," which awaken the desire for more. But henceforward speculation and theory must yield precedence to observation and measurement. The barometer and the level, the compass and the sextant, will soon nullify "the reports of the natives," "the strong probabilities," and the "almost certainties" which still form the basis of our most elaborate maps. The true gate has been discovered. The easy entrance to the interior from the eastern coast will render unnecessary the difficult ascent of the river itself; new expeditions will be sent out; and before another century has gone, commerce, civilization, and Christianity will have erected their stations all through that region hitherto so obscure and inaccessible, and yet so abundant in many of the precious gifts of Nature.

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ART. V. — *History of the United States Sanitary Commission, being the General Report of its Work during the War of the Rebellion.* By CHARLES J. STILLÉ. Philadelphia: J. B. Lippincott & Co. 1866. 8vo.

THE history of the war of the Rebellion cannot be comprised in a narrative of military operations and political and financial conditions. The historian who confines himself to these omits an important part of his work. To understand the war, to obtain a correct notion of the principles on which it was waged, to appreciate the necessity even of special military movements, and to comprehend its results, especially in its effect upon the national character and ideas, a large share of attention must be given to the social conditions of the country, to the opinions, sentiments, impulses, and desires of the American people, and to the forms in which their exertions to maintain the cause which they had at heart took shape. The novel conditions of national life, which had their source in our democratic system, and which, up to the period of the war, had been but partially